feldspathic rocks, there might result such a change as is here shown to have occurred. Certain facts which the speaker had observed in the serpentine deposits of Chester County, Penna., notably in Brinton's quarry, indicate that a change from a granitic dyke into serpentine is not an uncommon occurrence.

The two points of interest offered by the specimens here described are, 1. The crystallization of serpentine, as shown by its optical character; 2. The direct alteration of the feldspar and mica of graphic granite into the magnesian minerals, deweylite and serpentine, while the quartz has been fractured.

Contraction of Vegetable Tissues Under Frost.—At the last meeting of the Botanical Section, Mr. MEEHAN referred to a prevalent opinion that the liquid in vegetable tissues congealed as ordinary liquid does, and, expanding, often caused trees to burst with an explosive sound. Mr. Meehan made experiments with young and vigorous trees, varying from one foot to three feet in circumference. They were carefully measured in early winter when the thermometer was about 40°, and again after they had been exposed for many days to a temperature below freezing point, and, at the time of measurement, to 10° above zero.

In no case was there the slightest evidence of expansion, while in the case of a large maple (*Acer dasycarpum*), of 3 feet $11\frac{1}{2}$ inches round, there appeared to be a contraction of $\frac{1}{8}$ inch. This was the largest tree experimented with. In dead-wood soaked with water, there was an evident expansion; and the cleavage with explosion, noted in the case of forest trees in high northern regions, may result from the freezing of liquid in the centre or less vital parts of the trunks of trees.

In some hardy succulents, however, instead of expansion under frost, there was a marked contraction. The joints or sections of stem in *Opuntia Rafinesqui* and *O. Missouriensis*, shrink remarkably with the lowering of the temperature. As soon as the thermometer passes the freezing point, the shrinkage is so great that the whole surface has the wrinkled appearance presented by the face of some very aged person. A piece of *Opuntia Rafinesqui*, which in November measured 4 inches in length, is but $3\frac{1}{2}$ now, and is not half the thickness it was in the autumn. In the winter when the thermometer was down to 10° above zero, the pen-knife penetrated the tissue just as easily as in summer, and no trace could be discovered of congelation in the juices of the plant. Other succulents exhibited more or less signs of shrinkage under extreme cold. *Mamillaria Nuttallii*, and *M. vivipara*, with *Echinocactus Simpsoni*, a mamillose form, drew the mammæ upwards, and had them appressed as closely as the spines would allow—and some species of *Sempervivum* did the same. This could only be accomplished by the contraction of the main axis from the apex downwards. *Sedum Hispanicum*, which has not a succulent axis, contracts its leaves into longitudinal wrinkles, pre-

senting the appearance of being withered or dead. They expand again in a few days of temperature above the freezing point. Specimens of this *Sedum*, and of *Opuntia Missouriensis*, preserved just above freezing point under glass, did not shrivel—and a plant of *Echinocactus Simpsoni*. taken under cover, after the mammæ had been appressed by frost, expanded them to its summer condition in a short time afterwards.

Assuming from these facts that the liquids in plants which are known to endure frost without injury, did not congeal, it might be a question as to what power they owed this successful resistance. It was probably a vital power, for the sap of plants, after it was drawn from the tree, congealed easily. In the large maple tree already referred to, the juice not solidified in the tree, exudes from the wounded portions of branches and then freezes, hanging as icicles often six inches long from the trees.

MARCH 20.

The President, Dr. LEIDY, in the chair.

Twenty-eight persons present.

Note on a New Gold-purple.—Dr. GEORGE A. KÖNIG stated that while experimenting with a solution containing

$Ca_2H_2As_2O_8$ . . .	= 5·242
$CaSO_4$	= 2·983
$CaCl_2$	= 4·890
$MgCl_2$	= 2·736
$AuCl_3$	= 0·112
H_3AsO_4 . . .	= 10·290
	26·163 grains per liter,

he observed that upon adding to it very slowly a solution of one part of crystallized ferrous sulphate in ten parts of water, stirring vigorously after each drop, at first a white turbidity formed which gradually assumed a very rich purple color. The flocculent precipitate settles completely in twenty-four hours, but may be collected on a filter at once. Sometimes the purple color develops gradually, requiring several hours, the precipitate being white for some time. This result obtains, when less ferrous salt is added than required. One cub. cent., containing $\frac{7}{100}$ milligr. of gold, of the above solution with $\frac{1}{10}$ cub. cent. of ferrous solution, developed a very fine precipitate. Sometimes the purple does not develop at all; the precipitate turns bluish gray and remains so.

This purple substance can be dried at 100° C. without change of color. Heated to red heat the pieces assume a glazed appearance and turn black; but the fine powder again shows a blue-purple